Patent claims

1. Circuit configuration, in particular for identifying error situations in interconnected partial systems (20a, 20b, 20c) for voltage generation in a fuel cell system, with
    -   an electrical signal line loop (10),
    -   several partial systems (20a, 20b, 20c) connected thereto, which evaluate the state of the signal line loop (10), wherein a first selectable switching means (40) is looped in between a first end (11) of the signal line loop (10) and a first voltage connection (30) and a second selectable switching means (41) is looped in between a second end (12) of the signal line loop (10) and a second voltage connection and
    -   a selection unit (60) for selecting the first (40) and the second switching means (41).

2. Circuit configuration according to claim 1, characterised in that a first impedance (50) is switched parallel to the first switching means (40) and a second impedance (51) is switched parallel to the second switching means (41).

3. Circuit configuration according to claim 1 or 2, characterised in that the first voltage connection (30) is a supply voltage connection for the partial systems (20a, 20b, 20c).

4. Circuit configuration according to one of claims 1 to 3, characterised in that the second voltage connection (31) is a ground connection.

5. Circuit configuration according to one of the preceding claims, characterised in that the first switching means (40) is a transistor.

6. Circuit configuration according to one of the preceding claims, characterised in that the second switching means (41) is a transistor.

7. Circuit configuration according to claims 5 and 6, characterised in that the first (40) and the second transistor (41) are transistors complementary to one another.

8. Circuit configuration according to one of claims 2 to 7, characterised in that the first (50) and the second impedance (51) are ohmic resistors.

9.   Circuit configuration according to one of the preceding claims, characterised in that the partial systems (20a, 20b, 20c) are connected to the signal line loop (10) with high resistivity.

10.   Circuit configuration according to one of the preceding claims, characterised in that the signal line loop (10) is looped through the partial systems (20a, 20b, 20c).

11.   Circuit configuration according to one of the preceding claims, characterised in that the partial systems (20a, 20b, 20c) have means (21) for interrupting the signal line loop (10) depending on their functional state.

12.   Method for identifying error situations of an electrical signal line loop (10) with several partial systems (20a, 20b, 20c) connected thereto, in particular partial systems (20a, 20b, 20c) for voltage generation in a fuel cell system, characterised by the steps:

      -      charging a first end (11) of the signal line loop (10) with a first voltage of a first voltage connection (30) and connecting a second end (12) of the signal line loop (10) to a second voltage connection (31) via a second impedance (51),

      -      alternating with this, connecting the first end (11) to the first voltage connection (30) via a first impedance (50) and charging the second end (12) with the second voltage of the second voltage connection (31) and

      -      measuring and evaluating the signal course on the signal line loop (10) to identify the error situation.

13.   Method according to claim 12, characterised in that, during evaluation of the signal course is detected which partial systems (20a, 20b, 20c) constantly measure the first voltage, which partial systems (20a, 20b, 20c) measure an undefined voltage and which partial systems (20a, 20b, 20c) constantly measure the second voltage and in that short-circuits or short-circuits to ground and/or interruptions of the signal line loop (10) are ascertained and/or located as a function of the voltages measured by the individual partial systems (20a, 20b, 20c).

14.   Method according to claim 12 or 13, characterised in that, during evaluation of the signal course an error is identified if at least one partial system (20a, 20b, 20c) measures a DC voltage.

15.   Method according to one of claims 12 to 14, characterised in that, during evaluation of the signal course a short-circuit of the signal line loop (10) with the first voltage connection (30) is identified if all the partial systems (20a, 20b, 20c) measure a DC voltage with the level of the first voltage connection (30).

16.   Method according to one of claims 12 to 15, characterised in that, during evaluation of the signal course a short-circuit of the signal line loop (10) with the second voltage connection (31) is identified if all the partial systems (20a, 20b, 20c) measure a DC voltage with the level of the second voltage connection (31).

17.   Method according to one of claims 12 to 16, characterised in that, during evaluation of the signal course an interruption at a location on the signal line loop (10) is identified if partial systems (20a, 20b, 20c) on one side of the location constantly measure the first voltage and partial systems (20a, 20b, 20c) on the other side of the location constantly measure the second voltage.